Smugglers also will use the United States as a transshipment point for moving weapons hidden among legitimate cargo, as they have done in the past. In one case "two Lithuanian nationals were arrested after they allegedly tried to sell Russian shoulder-fired surface-to-air missiles for $330,000 to US agents posing as [Colombian] drug dealers. They were to be shipped through Bulgaria, Puerto Rico, and Miami."[128] Another case, the largest in U.S. history, caught significant attention when U.S. military weapons left over from the Vietnam War era were shipped through the Port of Long Beach, California, in two large, sealed containers. "Before the arms returned home, they were well-traveled, having gone from Ho Chi Minh City to Singapore to Bremerhaven, Germany, through the Panama Canal, and up to Long Beach."[129] The containers were filled with thousands of grenade launchers and M2 carbine parts and were never inspected by U.S. Customs while in the Port of Long Beach because they were not destined for the United States. Moreover, the cargo was represented as "hand tools and strap hangers." The containers were then placed on a truck and transported to the Mexican border where the arms were discovered by chance.[130] Although it is unknown how often arms are smuggled through the United States, it is reasonable to suspect organized crime will continue to take advantage of trade deregulation and legitimate commercial infrastructure to move illicit arms to their final destination.

Smugglers will attempt to transport weapons manufactured in the United States to Central and South America. A majority of these weapons first move into Mexico, primarily carried overland by human "mules" or by commercial air.[131] However, maritime smuggling represents another alternative for moving weapons from the United States to Central America. No substantial data exist on the number of weapons illegally exported from the United States via maritime means, but a report prepared by Mexico's Attorney General's Office, "cites flourishing gun/drug routes along the Pacific coast, the Gulf coast, and Central Baja and adds that a 'significant' amount of arms trafficking originates out of central Florida, crossing through the Caribbean and entering Mexico through the Yucatan Peninsula."[132] In the future, maritime smuggling via these routes likely will expand if U.S.-Mexican border inspections intensify to stem the overland flow of illicit weapons and substances.

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[128] U.S. Southern Command, "Arms Trafficking in the Caribbean," accessed on Intelink.

[129] Lora Lumpe, "The US Arms Both Sides of Mexico's Drug War," Covert Action Quarterly (Summer 1997): accessed online.

[130] ibid.

[131] "According to a U.S. Customs survey conducted at the Los Angeles International Airport (LAX), gunrunners often wrap the firearms in foil and then put them in their checked baggage. Smugglers also hide weapons in television sets or other electronic components and ship them either as air freight or as personal luggage. In 1989, U.S. Customs officers recovered 463 firearms at LAX. It can probably be assumed that many more guns escaped detection there and at other U.S. airports."

[132] Lora Lumpe, "The US Arms Both Sides of Mexico's Drug War," Covert Action Quarterly (Summer 1997): accessed online.

In summary, the demand for small arms and light weapons will not diminish through at least 2020, and will continue to drive the black market and associated smuggling activities that transport them. While some of the weapons will move across land or by air, many will be transported via maritime means. These shipments will be difficult to detect, especially those shipped among legitimate cargo by the large smuggling operations that exploit the legitimate transportation infrastructure. Small arms will continue to be used by rogue states, insurgents, terrorists, and criminal organizations, any of which can threaten the ability of international organizations and national governments to maintain stability. Interdiction and prevention of illicit small arms and light weapons will continue to present a significant challenge to both U.S. and foreign law enforcement agencies.

c. Unlawful Migrant Entry Methods

With emigration pressure from less developed countries[133] expected to rise over the next 20 years,[134] thousands of potential immigrants will be unable to gain legal admission to the United States because of quota-controls, travel costs, or other obstacles. For a variety of reasons, many of these migrants will attempt to enter the United States illegally, and, with more than 12,000 miles of U.S. coastline, many of these attempts will be by maritime means. While some migrants will make these attempts on their own or en masse, others will receive assistance from family, friends, or paid smugglers to avoid detection and capture by border control forces.

Figure III-24. U.S. Coast Guard forces escorting a Chinese migrant smuggling vessel.

[133] The term Less Developed Countries (LDCs) has replaced the term Third World and refers to the bottom group or countries in the hierarchy of developed countries (DCs), former USSR/Eastern Europe (USSR/EE) and less developed countries (LDC). These countries are generally characterized by low output levels, low standards of living and per capita GDP less than $5000 and often less than $1500.

[134] See Chapter II, Section A2.

(1) Unassisted Methods. Unassisted illegal entries into the United States by maritime means will likely decrease by 2020. In the past, migrants trying to enter the United States unassisted have attempted to do so en masse, individually, and by stowing away. Each of these methods has met with varying degrees of success, but has been effective enough to ensure future migrants will continue its use. However, U.S. policies and interdiction efforts will limit the number of people who try these methods to reach the United States.

Figure III-25. Haitian mass migration during 1994.

(a) Mass Migration. The United States has weathered five maritime mass migrations in the last two decades, all from Cuba and Haiti.[135] In the Cuban "boatlifts," thousands of Cubans used any boats or rafts they could obtain to sail toward the United States, or they jumped aboard U.S. vessels and sailed to Cuba to bring people back to the United States. In the Haitian cases, thousands of people crowded onto dilapidated wooden sailboats to leave Haiti for the United States. The overwhelming demands of such large groups of people strained U.S. societal infrastructure and government resources so severely that the U.S. government now routinely monitors events that may spark other mass movements. The policies and actions of the United States, such as routine Coast Guard patrols north of Haiti and within the Mona Passage, direct repatriation of migrants, and the May 1995 Immigration Accords with Cuba have helped deter mass migrations. With these measures in place, the likelihood of future mass migrations has been reduced, though certainly not eliminated.

[135] Camarioca, Cuba (1965) - 5000 people; Mariel, Cuba (1980) - 125,000 people; North Coast of Haiti (1991) – 25,000 people; North Coast, Haiti (1994) – 25,000 people; and North Coast of Cuba, Havana to Caibarien - 38,000.

(b) Individual Attempts. Unassisted individual attempts to depart via raft, sailboat, or stolen vessels will decrease over the next 20 years as better detection methods and high failure rates make these methods less desirable than assisted methods. Currently, the greatest immigration threat from these methods comes from Cuba, Haiti, and the Dominican Republic. Migrants from these countries often use the islands of the Bahamas as a waypoint en route to the United States.

(c) Stowaways. With an expected increase in maritime trade, stowaways will continue to frustrate shipping companies and immigration officers well into 2020. In the future, stowaways will continue to engage in dangerous clandestine boardings and transits on commercial vessels. In some cases, these attempts will prove deadly as it did for the 31 Dominican migrants who died from asphyxiation after attempting to hide in a shipping container in August 1998.[136] In this case the migrants only endangered themselves, but some attempts endanger the ship and crew as well. In July 1998, the crew of an Italian ship located five Tunisian stowaways and locked them in a cabin to secure them for the authorities. The migrants then reportedly set a fire in an attempt to escape rather than face forced repatriation. Unable to break free, the five stowaways died in the cabin's bathroom.[137] As these examples illustrate, some personal situations are so dire that migrants will assume great risk in order to escape their present circumstances. With the global economy creating ever-widening rifts between socioeconomic classes, future efforts by the world's poor to escape will likely become more dramatic and entail increasing danger. Although stowaway movements will continue to account for only a small fraction of global illegal migrant movement, the inherent danger of this practice to the migrants, the ship, and its crew will continue to make this issue a concern for the United States.

(2) Assisted Methods. While the total amount of future unassisted migrant movements is expected to decrease, assisted movements will likely increase. Alien smuggling in the future will grow increasingly complicated as organized crime expands its infrastructure to capture a share of the $10 billion dollar illicit human trafficking business.[138] As a result, a majority of migrants bound for the United States over the next 20 years will likely do so via illegal methods.

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[136] "Would-Be Illegals Reportedly Suffocate" (text), in *Santa Domingo Ultima Hora* (25 August 1998), online version, Foreign Broadcast Information Service, 26 August 1998, accessed online.
[137] "Investigation Begins into Migrant's Death in Ship Blaze" (text), in *Rome ANSA* (28 July 1998), online version, Foreign Broadcast Information Service, 28 July 1998, accessed online.
[138] U.S. Southern Command, "Illegal Migration in the Caribbean," accessed on Intelink.

As discussed previously, smuggling operations will continue to threaten the United States and other developed nations. Alien smugglers, using common smuggling techniques adapted to their human cargo, are not likely to make significant changes to methods that have worked reliably for decades. For transportation, smugglers will continue to rely on decrepit bulk freighters and converted fishing vessels for long distance movement and smaller motorboats for shorter distances.

Figure III-26. Chinese migrant smuggling vessel.

(a) Bulk Freighters. Smugglers use small freighters because they remain the cheapest means of moving large numbers of people long distances. Although in limited use for alien smuggling in the Caribbean, bulk freighters are the primary transportation for Chinese organized crime syndicates moving illegal Chinese to the United States. These vessels are unable to earn money by legitimate means, making them exploitable targets for organized crime groups who will easily obtain the crew and vessel's services. Although these vessels' poor condition and lack of life saving equipment make them hazardous to use, their relatively high availability, low cost, and nondescript characteristics will continue to be attractive to future smugglers.

(b) Speedboats. Go-fasts and motorboats will continue to be used to move illegal migrants shorter distances. Bahamian-based smugglers use 20–30-foot vessels to move Cubans, Haitians, Indians, and Pakistanis, as well as migrants of other nationalities into the United States from Bimini (40 miles) or Grand Bahama (50 miles). This relatively short distance (2-4 hours) can be negotiated in a variety of craft and smugglers easily blend into the abundant traffic, of which there is a constant stream across the Florida Straits between Miami/West Palm Beach and the Bahamas. Similar techniques are used by Miami and Cuban-based smugglers moving Cuban migrants. Because of the longer distances involved and the need to evade both Cuban and U.S. border forces, these smugglers rely extensively on go-fasts. These larger (35-40 foot) offshore sport fishing boats and racing boats can move small family groups (four to six persons) at speeds of 30 knots or more. The larger size of these vessels gives them improved sea-keeping ability on this longer trip (100-150 miles from the Cuban north coast to the Florida Keys). Little change in this type of smuggling methodology is expected in the future.

Figure III-27. A Coast Guard boat crew moves in to look for bodies that might be trapped in a capsized boat. Fourteen people died in the December 1998 accident, which is one of the worst accidents involving suspected migrant smuggling.

(c) Fishing Vessels. Some migrants use multiple smugglers for differing legs of the total transit to the United States. Cuban migrants have been known to pay fishermen to take them from Cuba to remote uninhabited Bahamian islands such as Cay Sal. Once there, relatives or another hired smuggler bring them to the United States or inhabited Bahamian Islands where they work or attempt to obtain false immigration documents.

(d) Use of Third Countries and U.S. Territories. As mentioned earlier, third countries will continue to be major gateways for illegal migration to the United States. Smugglers will use indirect routes to stage near U.S. borders before finally moving migrants into the United States. Staging will allow smugglers the opportunity to observe law enforcement capabilities and judge weaknesses prior to the final landing. Smuggling into nearby countries such as Mexico and Canada will also likely increase as well as to U.S. territories such as Puerto Rico, the U.S. Virgin Islands, and Guam. Interdicting illegal migrants at sea (whether they are assisted or unassisted) will continue to remain a serious challenge for the United States. Since 1980, about 290,000 illegal migrants have been interdicted at sea and with a rapidly expanding global population, this number is likely to increase.[139] The high cost of interdicting migrants at sea and repatriating them will continue to challenge U.S. forces.[140] While interdiction costs remain high, intercepting U.S.-bound illegal migrants before they reach the border saves the government much more. Since migrants interdicted at sea are afforded less legal recourse than those caught within the U.S. border, the government avoids the cost of providing basic human services and security as well as the expense of an extended appeals process.

[139] U.S. Coast Guard estimates circa 1998.

[140] The interdiction of the Chinese smuggling vessel CHIH YUNG in the summer of 1998, for example, cost the U.S. Coast Guard approximately 5.6 million dollars in resources.

Such legal appeals can stretch for years, and migrants released on their own recognizance often slip away into the general population before the case becomes fully adjudicated. An important future challenge for the U.S. government will continue to be to stop illegal maritime migrants before they land.

B. POLLUTION AND DEGRADATION OF NATURAL RESOURCES

Degradation of the marine environment, unquestionably, will remain a substantial concern in 2020. However, there will be a great disparity in the actual health of the seas from region to region around the world. Because of the high value developed countries will place on preserving as pristine a marine environment as possible, they will continue the trend toward more regulation and stricter standards in shipping and environmental protection, and will devote the resources necessary to obtain their goal. The result will be healthier marine environments near most developed states by 2020. Conversely, the developing states will not have the means, even if they have the will, to enact effective measures to protect the seas adjacent to their countries. Waters abutting most developing states will, therefore, be more polluted in 2020 than today. Several factors will contribute in varying degrees to the degradation of the marine environment.

1. Coastal Population Growth

Coastal population growth will play an important role in the degradation of the marine environment well through 2020. Human activity degrades the environment through nonpoint-source pollution and the physical alteration of habitats. (Nonpoint-source pollution refers to pollutants originating from non-distinct sources such as agricultural lands, roadways and other paved surfaces, soil erosion, septic tanks, and the air).[141] Already, 66 percent of the world's people live within 100 kilometers of the ocean, and because of migration from inland areas to the prosperous coasts, populations in coastal zones are increasing at a much faster rate than overall population.[142] For example, in the United States, 17 of the 20 fastest growing states are located along the coast,[143] and the coastal population is increasing by 3,600 people per day.[144] This continuous coastal growth poses a threat to the natural resources in the surrounding waters. While the United States is likely to expend the necessary resources to combat degradation of the marine environment resulting from coastal population growth, most countries will not have the means to do so.

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[141] The H. John Heinz III Center for Science, Economics and the Environment, Our Ocean Future (Washington, D.C.: The H. John Heinz III Center for Science, Economics and the Environment, 1998), 16.

[142] Gale Mead Hey, Population and Environment: Linkages: Oceans, accessed online, URL: <http://www.cnie.org/pop/oceanshort.htm>.

[143] The Heinz Center, "Coastal/Marine Systems," accessed online, URL: <http://www.heinzctr.org/Programs/coastalmarine.htm>.

[144] Thomas J. Culliton, National Ocean and Atmospheric Administration 1998, "Population: Distribution, Density and Growth," NOAA's State of the Coast Report, accessed online., URL:<http://state_of_coast.noaa.gov/bulletins/html/pop_01/pop.html>.

2. Nonpoint-source Pollution

Nonpoint-source pollution from ashore will remain the largest threat to the health of the marine environment through 2020. 90 percent of marine pollutants originate on land and eventually make their way to the rivers and bays connected to the ocean.[145] "The oceans are the ultimate sinks for the by-products of human activities, receiving waters from cities, farms and industries via sewage outfalls, dumping from barges and ships, coastal runoff, river discharge and even atmospheric transport."[146] Common forms of land-based pollution include fertilizers, pesticides, herbicides, heavy metals, and sewage. These pollutants have a significant impact on the coastal regions. In the last 50 years, two- to tenfold increases in nutrient enrichment have occurred in coastal waters.[147] Increased nutrient levels have led to eutrophication and growth of tiny toxic animals.[148] For developing countries, these problems will worsen through 2020. The United States and many other developed states will have taken significant regulatory and enforcement action to reduce nonpoint-source pollution by 2020. In the future, at least in the developed world, human activities that severely degrade coastal areas will be stringently monitored to reduce pollution from land runoff.

Figure III-28. Nonpoint-source pollution will represent a significant threat in 2020.

[145] Gale Mead Hey, "Population and Environment Linkages: Oceans," accessed online, URL:<http://www.cnie.org/pop/oceanshort.htm>.
[146] Environmental Software and Services GMBH, Australia, "Marine Pollution," accessed online, URL: <http://www.ess.co.at/GAIA/FRAMEWORKS/PISS/Marine_pollution.html>.
[147] The H. John Heinz III Center for Science, Economics and the Environment, Our Ocean Future (Washington, D.C.: The H. John Heinz III Center for Science, Economics and the Environment, 1998), 14.
[148] ibid.

3. Maritime Accidents

Maritime commercial activity will expand greatly during the next 20 years[149] resulting in larger amounts of petroleum and chemical products being transported by ship. However, the adoption and enforcement of stricter safety standards will ensure that both the number of devastating oil incidents and the volume of contaminants spilled will decrease substantially. This trend is already evident in the United States, according to U.S. Coast Guard statistics. "The amount of oil and chemicals shipped through U.S. waters has steadily increased over the past 15 years, from 259.9 million gallons in 1982, 307.8 million gallons in 1990, and 333.1 million gallons in 1995. At the same time, however, the amount of gallons spilled per million gallons shipped has dropped dramatically, from 13.5 gallons, to 9.03 gallons, to 5.96 gallons."[150]

Because of the central role the maritime shipping industry plays in creating interdependence among states, the actions of developed states to effect a safer shipping industry will contribute to safer shipping in developing countries as well. Efforts such as the U.S. Port State Control program will grow, reducing if not eliminating loopholes exploited by shipping companies to save money through the use of flag states with lax shipping regulations and little ability to enforce the standards they do have. Therefore, environmental damage caused by marine accidents should decrease worldwide over the next 20 years.

Figure III-29. 80,000 gallons of fuel oil were spilled in July 1995 when the vessels Alexia and Enif collided 70 miles south of New Orleans.

[149] Refer to Chapter III, Section A2, for discussion on increase in maritime commercial activity.

[150] Richard D. Kohout and others, Looking Out to 2020: Trends Relevant to the Coast Guard (Alexandria, VA: Center for Naval Analyses, 1997), 150, citing the U.S. Coast Guard, Marine Safety 1995 Performance Report, 19.

4. Ocean Dumping

Both the number of incidents and volume of waste dumped into the marine environment will decline substantially by 2020, another effect of stricter regulation of the shipping industry. Whether vessels wish to transport toxins, dump nuclear and/or industrial waste, or deballast tanks, doing so will remain explicitly prohibited without the possession of a permit.The likelihood of obtaining such permission, however, will simultaneously decrease as restrictions tighten to encompass ever more toxic chemicals. Consequently, the present declining trend in ocean dumping, in both volume and number of incidents, both internationally and within waters under U.S. jurisdiction, is likely to continue.[151] Catching ocean dumping violators will remain an enforcement challenge, however, as great incentive will exist to try to avoid legal but expensive disposal options.

5. Noise Pollution

Acoustic pollution is an issue beginning to garner attention that potentially could affect future shipping regulations. Ocean noise is reportedly affecting marine mammals and their communications,[152] although no studies exist conclusively proving so. The subject is currently being studied, and should it be shown that noise from human activity harms marine mammals, ships will become the primary target for noise reduction since they account for over 99 percent of the acoustic energy humans put in the oceans.[153] In the frequency band used by many whales (20 to 300 Hz), the average ambient noise level has risen ten- to one hundred-fold compared to a century ago.[154] Environmental groups probably will exert pressure in the future to reduce acoustic pollution even if studies indicate, but do not prove, that noise is injurious to marine mammals.

6. Invasive Species

With maritime trade expected to triple by 2020, the threat of invasive species entering the United States through seaborne trade will increase significantly. Invasive species are those species intentionally or unintentionally introduced into an area outside of their natural ranges. The maritime environment is involved in two ways: as a victim and as a means of transport. Invasive species affect marine, estuarine, freshwater, and terrestrial ecosystems throughout the world and have strong economic and environmental consequences. According to the U.S. Office of Technology Assessment, nearly every part of the U.S. faces at least one highly damaging invasive species.

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[151] Richard D. Kohout and others, Looking Out to 2020: Trends Relevant to the Coast Guard, (Alexandria, VA: Center for Naval Analyses, 1997), 140.

[152] Interview with Dr. James Luyten, Senior Associate Director and Director of Research, Woods Hole Oceanographic Institution, interview with author, October 1998 and Richard Pittenger, Associate Director for Marine Operations, Woods Hole Oceanographic Institution, interview with author, October 1998 and Steve Nadis, "A Noisy Silent Spring," Currents Vol. 33, No. 1 (Summer 1998): 9.

[153] Steve Nadis, "A Noisy Silent Spring," Currents Vol. 3, No. 1 (Summer 1998): 9.

[154] ibid.

a. Marine Environment

Worldwide, ballast water discharge from ships appears to be the major vector of aquatic invasive species. The volume of ballast water discharged in U.S. waters in 1991, for example, was estimated to be 57 million metric tons or 2 million gallons per hour. Ballast water, commonly originating from estuarine systems, often contains a diverse assemblage of microorganisms, plants, and animals. This problem has not been contained to one single area (See Table III-1). Although not all invasive species are damaging, some have been responsible for paralytic shellfish poisoning, declining commercial and sport fisheries, and possible cholera outbreaks. An example of the range and cost of damage from invasive species can be derived by examining the effects of the introduction of the zebra mussel into U.S. waters. These effects range from clogged municipal and industrial water intake pipes to the decline and perhaps extinction of native mussel populations.[155] It has been estimated that the minimum cost to industries and municipalities to repair zebra mussel damage from 1993 – 2003 will be more than three billion dollars.[156]

GEOGRAPHIC AREA	ESTIMATED NUMBER OF INVASIVE SPECIES
San Francisco Bay	200
Hudson River Estuary	120
Great Lakes	137
Chesapeake Bay	Unk

Table III-2. Number of Invasive Species in Selected Parts of United States.[157]

To combat such invasive species, Congress passed the National Invasive Species Act of 1996, mandating the implementation of regulations that require all vessels entering U.S. waters to exchange ballast water (flushing of ballast tanks) outside the U.S. EEZ. This should reduce the introduction of invasive species into the United States, but will require cooperation by the maritime industry and strict enforcement to ensure compliance. Until better methods of detection and prevention are developed, invasive species will remain a significant concern well into the future.

[155] Chesapeake Bay Commission, The Introduction of Nonindigenous Species to the Chesapeake Bay via Ballast Water, Ballast Water Working Group, January 1995, iii.
[156] ibid., 1.
[157] ibid., 4.

b. Terrestrial Environment

Invasive species can create tremendous damage in the terrestrial environment as well as the marine environment. For example, insects introduced into the United States through maritime trade will pose a serious threat to U.S. forests and agriculture and could cause billions of dollars in damage over the next two decades.

Invasive insects such as the Asian long-horned beetle, various exotic Bark beetles, and the Asian gypsy moth usually enter North American ports in untreated wooden packaging, ship's ballast, agricultural stock, or containers aboard ships arriving from Europe or the Far East. Not only are they extremely difficult to detect, but they also often arrive on the North American continent in other countries, compounding the difficulty in keeping them out of the United States. According to one study, "the Canadian Maritime Provinces and Newfoundland have yielded more records of invasive species of insects than any other region of North America. The port city of Halifax, Nova Scotia, is especially noteworthy for its rich immigrant fauna."[158] After infiltrating North American ports, these insects then make their way to the United States.

Once established, the insects can cause significant damage to U.S. agriculture. The Asian long-horned beetle is the newest insect creating concern in the United States. With no natural enemies in the United States and a stubborn immunity to tree-friendly pesticides, the bug may inflict $138 billion in damage if it spreads to forests, according to the U.S. Department of Agriculture.[159]

Over the next 20 years, invasive insects will become increasingly difficult to detect as shipping volume increases and trade opens with developing countries. As a result, the potential for foreign insects to infiltrate U.S. agriculture through maritime transportation will increase.

Figure III-30. The Asian long-horned beetle is the newest invasive species.

[158] E. Richard Hoebeke and A. G. Wheeler, Jr., "Meligethes Viridescens (F.) (Coleopters: Nitidulidae) in Maine, Nova Scotia, and Prince Edward Island: Diagnosis Distribution, and Bionomics of a Palearctic Species New to North America," Proc. Entomol. Soc. Wash.b (April 1996): 221.

[159] "Asian beetle threatens U.S. forests," Reuters, 25 October 1998, accessed online.